DOCKET FILE COPY ORIGINAL

RECEIVED

JAN - 8 1998

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

**Before the**

**FEDERAL COMMUNICATIONS COMMISSION**

**Washington, DC 20554**

| | | |
|---|---|---|
| In the Matter of | ) | |
| | ) | |
| Amendment of Parts 1, 21 and 74 to Enable | ) | MM Docket No. 97-217 |
| Multipoint Distribution Service and | ) | |
| Instructional Television Fixed Service Licensees | ) | File No. RM-9060 |
| to Engage in Fixed Two-Way Transmissions | ) | |

## COMMENTS OF NEXTLEVEL SYSTEMS, INC.

Next Level Systems, Inc. ("NextLevel")[1] submits the following comments in response to the Notice of Proposed Rulemaking in the above-captioned proceeding.[2] NextLevel supports the concept of two-way transmission on MDS/ITFS frequencies as both technologically sound and in the public interest. However, NextLevel proposes that the Commission consider several technical improvements to the emission mask, which are detailed in these comments.

Interest of NextLevel Systems, Inc.

NextLevel is a leading world supplier of systems and components for high performance networks delivering video, voice and Internet / data services to the cable, MMDS, telephony and satellite markets. NextLevel is dedicated to deploying leading-

[1] On or about February 2, 1998, NextLevel Systems will undertake a strategic restructuring. The core cable, satellite and wireless businesses will assume the company's former name of General Instrument Corporation.



No. of Copies rec'd 027
List A B C D E

edge technology through intensive research and development; high quality, low cost manufacturing; and superior customer service and support. NextLevel is also an active participant in several industry standards-setting organizations, including the Society of Cable Telecommunications Engineers ("SCTE") and CableLabs.

Summary of Position

NextLevel supports amendment of the Commission's rules to enhance the ability of MDS and ITFS licensees to provide two-way communication services. However, in light of the change from analog to digital signals, with energy spread evenly across the channel rather than concentrated in the RF carrier, the Commission should clarify the interpretation of the emission mask for digital MDS signals. Moreover, several minor changes to the proposed emission mask are needed to achieve conformance with interference test results and the capabilities of commercially available transmitters, as well as to comply with the common international practice for the suppression of spurious emissions.

Support for Two-Way Digital Transmissions

NextLevel supports the concept of two-way digital operations on MDS/ITFS channels because, as a general matter, we believe that the public interest will be served by allowing wireless cable operators to provide such services in competition with other wireless and wireline operators. While we believe market factors will vary from region to

---

[2] In the Matter of Amendment of Parts 1, 21 and 74 to Enable Multipoint Distribution Service and Instructional Television Fixed Service Licensees To Engage in Fixed Two-Way Transmissions, MM

region, and that not all wireless cable operators will choose to employ two-way transmission, two-way digital services from wireless cable operators will provide welcome alternatives, particularly in areas where incumbent wireline providers are not meeting the needs of their subscribers.

Clarification of Emission Mask Specification

As a preliminary matter, NextLevel asks the Commission to clarify that the specification of the proposed emission mask for digital MDS/ITFS transmitters is to be interpreted in a manner similar to emission masks for other digital transmitters. In particular, we ask for confirmation that the phrases "38 dB attenuation" and "60 dB attenuation"[3] mean that the measured power in the measurement bandwidth (e.g., 100 kHz) at an out-of-channel frequency is to be attenuated by those amounts with respect to the total in-channel power in a 6 MHz bandwidth. Conversely, we seek confirmation that the emission mask does not require attenuation of the out-of-channel emission by 38 dB or 60 dB with respect to the power within an in-channel 100 kHz bandwidth. The second interpretation is 17.8 dB (6 MHz vs. 100 kHz) more stringent.

This clarification is required to minimize industry confusion. The MDS/ITFS industry is familiar with analog NTSC transmissions that contain most of the signal power within a peak visual carrier component. The digital signal, however, spreads the power of the signal evenly across the 6 MHz channel. Thus, the full power of the in-channel analog signal may typically be contained within the measurement bandwidth,

---

Docket No. 97-217, File No. RM-9060, FCC 97-360, released October 10, 1997 ("Notice").

[3] Notice at C-8 (proposed Section 21.908).

while only a portion of the in-channel digital signal is contained within the measurement bandwidth. This clarification would assure that equipment suppliers and their customers are not harmed by an overly and unnecessarily conservative interpretation of the emission mask.

Resolution Bandwidth

NextLevel supports a resolution bandwidth of 100 kHz for applying the emission mask to out-of-channel emissions. As the Commission notes,[4] the 100 kHz bandwidth was previously proposed and adopted, and we believe it is an appropriate measurement bandwidth for this purpose.

Maximum Attenuation

The emission mask should to be modified to incorporate a maximum attenuation for spurious emissions of "43 + 10 log (power) or 60 dB, whichever is less stringent," rather than simply "60 dB." This is the practice adopted in most other radio services.[5] It is also the recommended practice internationally, as embodied in Recommendation ITU-R SM.329-6. Such a modification results in an absolute emission power limit of -43 dBW (-13 dBm) in a 100 kHz reference bandwidth. That is, suppression of spurious emissions beyond -13 dBm should not be required.[6] The absence of such a maximum attenuation imposes a penalty on MDS transmitters as compared to other radio services.

---

[4] Notice at n.25.

[5] See, e.g., 47 C.F.R. §§ 90.210, 101.111.

[6] See, e.g., US WRC-97 Industry Working Group IWG-6 document 406, ITU-R SG 1 document 1/31 (October 30, 1996) at Annex 6.

Attenuation at the Channel Edge

The emission mask should be modified to be less stringent in the region between the channel edge and 250 kHz beyond the channel edge. This change is needed to allow the emission mask to comport with the test results that formed the basis for the Digital Declaratory Ruling,[7] and with the equipment commercially available today.

Rather than the proposed level of 38 dB attenuation at the channel edge, NextLevel recommends "25 dB attenuation at the channel edge linearly sloping to 40 dB attenuation at 250 kHz beyond the channel edge." Beyond this 250 kHz offset, the emission mask would conform exactly to the emission mask proposed in Section 21.908. See Appendix A, attached Figures 1 and 2.

The petition that led to the adoption of the Digital Declaratory Ruling appended a test report entitled "Report on Wireless Cable Interference Testing April 27-May 4, 1995" ("Interference Report").[8] The Interference Report shows proposed emission spectra for 8-VSB and 64-QAM signals.[9] In both cases, the signal is shown as having an occupied bandwidth of 6.5 MHz rather than 6 MHz in order to reach 38 dB of attenuation. In other words, both signals fall to 38 dB of attenuation at 3.25 MHz from the center frequency, not 3.00 MHz from the center frequency.

NextLevel has confirmed through our own research and development that MDS/ITFS transmitter equipment currently on the market does indeed follow the data

---

[7] Request for Declaratory Ruling on the Use of Digital Modulation by Multipoint Distribution Service and Instructional Television Fixed Service Stations, Declaratory Ruling and Order, 11 FCC Rcd 18839 (1996) ("Digital Declaratory Ruling").

[8] Digital Declaratory Ruling at ¶ 17.

shown in the Interference Report. It requires an additional 250 kHz on each edge of the channel to fall to a 38 dB attenuation.

It is important to note that our proposal will not result in additional interference. First, the testing reported in the Interference Report used digital signals with this slightly reduced band-edge attenuation, and the results were acceptable. Second, the slightly increased power radiated into the adjacent channel does not impinge on the aural carrier or any other critical component of an analog NTSC signal.[10] Consequently, allowing the operation of digital transmitters that conform to the emission spectrum of the test data would serve the public interest by allowing the prompt installation and operation of digital transmitters. The more stringent specifications of the proposed emission mask would impose a time delay and additional costs, with no significant decrease in interference nor improvement in performance.

Treatment of Superchannels

The Commission has sought comment on the use of superchannels (combined contiguous adjacent channels), yet only considers a superchannel that is occupied by a single wideband transmission which fully occupies the superchannel.[11] NextLevel urges the Commission to allow more flexibility here. A wireless cable operator should be permitted to combine adjacent channels and then subchannelize that combined band into any size channels it chooses. For example, it should be permissible to use three 6 MHz channels to carry four 4.5 MHz transmissions. In fact, the operator should be allowed to

---

[9] Interference Report at 50.

[10] See Interference Report at 55.

overlap subchannel transmissions so that three 6 MHz channels might carry three 8 MHz transmissions, using whatever interference mitigation techniques the operator selects. The wireless cable operator should control interference at the edge of the contiguous channels either by using equipment complying with the emission mask, or by spacing the RF carriers of subchannels so as to create guardbands with respect to adjacent channel licensees. Such flexibility will assist wireless cable operators in most efficiently meeting the needs of a variety of customers.

[11] Notice at ¶ 18.

Conclusion

The Commission's proposed technical specifications for digital MDS/ITFS two-way transmissions are too stringent in several respects, and would unnecessarily increase equipment costs with no countervailing benefits in performance. The minor technical changes NextLevel proposes should be adopted because they will not create any additional interference, yet will allow two-way digital operations to be implemented more quickly and at lower cost than might otherwise occur.

Respectfully submitted,

NextLevel Systems, Inc.


Mark Kolber,
Senior Staff Engineer
NextLevel Systems, Inc.
2200 Byberry Road
Hatboro, PA 19040

Jeffery Krauss,
Consultant
17 West Jefferson St., Suite 106
Rockville, MD 20850

Quincy Rodgers,
Vice President, Government Affairs
Christine G. Crafton,
Director, Industry Affairs
Faye R. Morrison,
Government Affairs Representative
NextLevel Systems, Inc.
Two Lafayette Centre
1133 21st Street, NW, Suite 405
Washington, DC 20036


January 8, 1998

# APPENDIX A

**Figure 1**
**NLS Mask Modification**

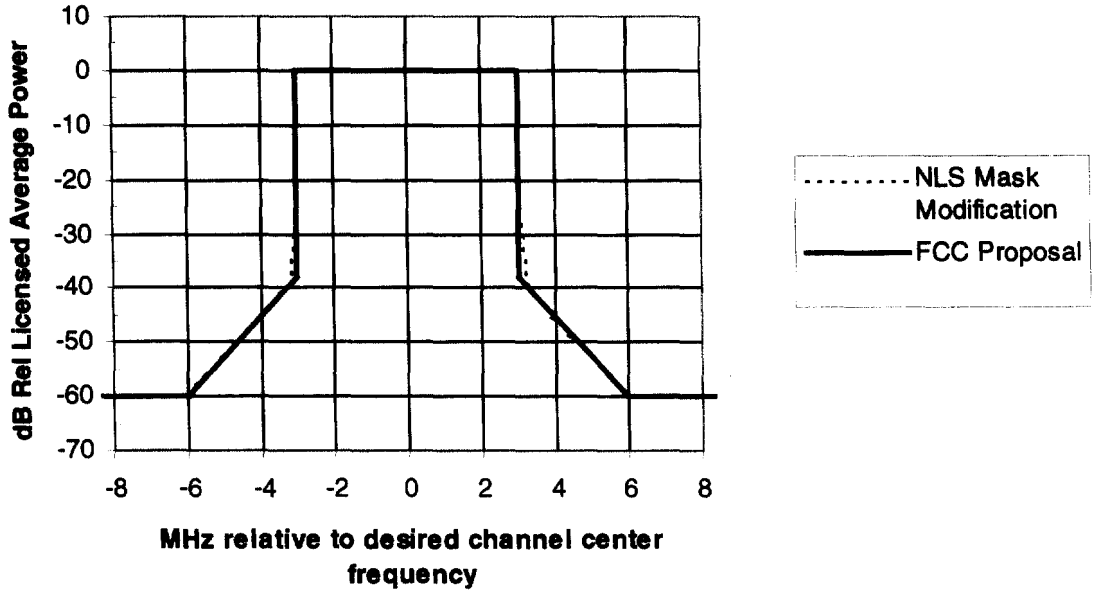


**Figure 2**
**NLS Mask Modification**